Table 37. OSCXCN: External Oscillator Control Register

R	R/W	R/W	R/W	R/W	R/W	R/W	R/W	Reset Value
XTLVLD	XOSCMD2	XOSCMD1	XOSCMD0	-	XFCN2	XFCN1	XFCN0	00110000
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	SFR Address: 0xB1

Bit7: XTLVLD: Crystal Oscillator Valid Flag
(Valid only when XOSCMD = 11x.)
0: Crystal Oscillator is unused or not yet stable
1: Crystal Oscillator is running and stable

Bits6-4: XOSCMD2-0: External Oscillator Mode Bits
00x: Off. XTAL1 pin is grounded internally.
010: System Clock from External CMOS Clock on XTAL1 pin.
011: System Clock from External CMOS Clock on XTAL1 pin divided by 2.
10x: RC/C Oscillator Mode with divide by 2 stage.
110: Crystal Oscillator Mode
111: Crystal Oscillator Mode with divide by 2 stage.

Bit3: RESERVED. Read = undefined, Write = don't care

Bits2-0: XFCN2-0: External Oscillator Frequency Control Bits
000-111: see table below

XFCN	Crystal (XOSCMD = 11x)	RC (XOSCMD = 10x)	C (XOSCMD = 10x)
000	Power Factor = 90 (10^3)	$f \le 25kHz$	K Factor = 0.741
001	Power Factor = 280 (10^3)	$25kHz < f \le 50kHz$	K Factor = 2.36
010	Power Factor = 810 (10^3)	$50kHz < f \le 100kHz$	K Factor = 7.10
011	Power Factor = 2.30 (10^6)	$100kHz < f \le 200kHz$	K Factor = 21.0
100	Power Factor = 6.30 (10^6)	$200kHz < f \le 400kHz$	K Factor = 60.8
101	Power Factor = 20.4 (10^6)	$400kHz < f \le 800kHz$	K Factor = 225
110	Power Factor = 36.6 (10^6)	$800kHz < f \le 1.6MHz$	K Factor = 773
111	Power Factor = 110 (10^6)	$1.6MHz < f \le 3.2MHz$	K Factor = 2141

CRYSTAL MODE (Circuit from **Error! Reference source not found.**, Option 1; XOSCMD = 11x)
Choose smallest Power Factor (PF) such that:
PF > 5 * ESR * f^2 * C_L^2, where
ESR = crystal equivalent series resistance in ohms
f = crystal frequency in MHz
C_L = load capacitance in pF (crystal capacitance, parasitic, compensation network)

RC MODE (Circuit from **Error! Reference source not found.**, Option 2; XOSCMD = 10x)
Choose oscillation frequency range where:
f = 1.23(10^3) / (R * C), where
f = frequency of oscillation in MHz
C = capacitor value in pF
R = Pull-up resistor value in kΩ

C MODE (Circuit from **Error! Reference source not found.**, Option 3; XOSCMD = 10x)
Choose K Factor (KF) for the oscillation frequency desired:
f = KF / (C * AV+), where
f = frequency of oscillation in MHz
C = capacitor value on XTAL1, XTAL2 pins in pF